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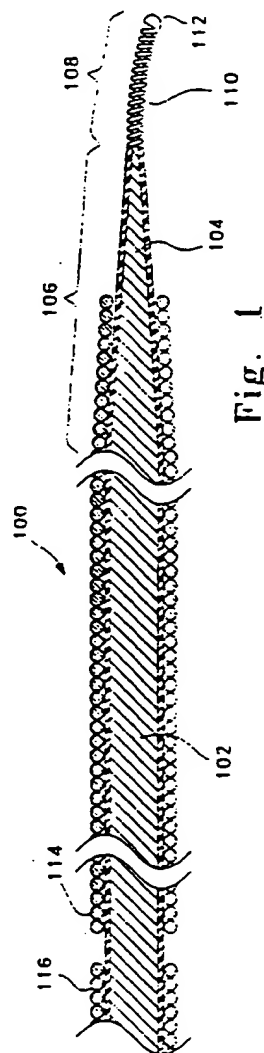
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(54) Delivery device

(57) This invention is a surgical device and a method of using it. It is a combination in which at least one vasoocclusive device, such as a coil, is placed directly on a core wire. The vasoocclusive coil (or coils) may be press-fit onto the core wire but are slidably removable using a pusher on the proximal end of the core wire. The core wire may also function as a guidewire by inclusion of a radiopaque, shapeable tip. This assembly may be used without an infusion or micro-catheter in the cerebral vasculature, although a guiding catheter is often used to direct the assembly to the region of the neck after introduction from an external access point.



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EP 0 711 532 A1

ilar in construction to the guide catheter (132) shown in Figure 2. Interior to the guiding catheter (140) is a micro-catheter (142) and a vasoocclusive coil (144). The diameter of the coil (144) is limited because of the presence of the micro-catheter (142) and the propensity for binding of the various components -- micro-catheter to guide catheter and coil to micro-catheter -- is enhanced just because of their flexibility and size. There is no guidewire inside the coil (144).

In contrast, Figure 4 shows a guide catheter (140) and, interior to the guiding catheter (140) a vasoocclusive coil (146) and a core wire (150). The absence of the micro-catheter in the inventive variation shown this Figure 4 allows more room for larger coils and lowers the propensity for binding in tight turns.

This invention has been described and specific examples of the invention have portrayed. The use of those specifics is not intended to limit the invention in any way. Additionally, to the extent that there are variations of the invention which are within the spirit of the disclosure and yet are equivalent to the inventions found in the claims, it is our intent that this patent cover those variations as well.

Claims

1. A vasoocclusive coil delivery assembly comprising:

- a) an elongated core wire having a proximal end and a distal end and a shapeable guide tip forming said distal end, and
- b) at least one helically wound vasoocclusive coil fitting coaxially about said core wire and slidably distally removable from said core wire.

2. The assembly of claim 1, wherein at least a portion of the elongated core wire is tapered.

3. The assembly of claim 1 or claim 2, additionally comprising a pusher adapted to push said at least one helically wound vasoocclusive coil distally and off said core wire.

4. The assembly of claim 3, wherein the pusher comprises a tubular member located coaxially about said core wire and proximally of the at least one vasoocclusive coil and which is slidable on said core wire.

5. The assembly of any one of the preceding claims, further comprising a lubricious coating on at least a portion of said core wire.

6. The assembly of any one of the preceding claims, wherein the shapeable tip comprises a helically wound coil fixedly attached to said core wire.

7. The assembly of claim 6, wherein the helically

wound shapeable tip is radiopaque.

8. The assembly of any one of the preceding claims, comprising more than one helically wound vasoocclusive coil.

9. The assembly of claim 8, wherein the most distal vasoocclusive coil has a length measured along the axis of the core wire which is greater than the remaining more proximal vasoocclusive coils.

10. A vasoocclusive coil delivery assembly comprising:

- a) a metallic elongated core wire having a proximal end and a distal end,
- b) a shapeable, radiopaque, helically wound coil guide tip fixedly attached to said core wire distal end,
- c) at least one helically wound vasoocclusive coil fitting coaxially about said core wire and slidably, distally removable from said guidewire, and
- d) a tubular pusher member located coaxially about said core wire and proximally of said at least one helically wound vasoocclusive coils and adapted to push said vasoocclusive coils distally on said core wire.

11. The assembly of any one of the preceding claims, wherein the core wire comprises stainless steel.

12. The assembly of any one of the preceding claims, wherein the core wire comprises a superelastic alloy.

13. The assembly of claim 11, wherein the superelastic alloy comprises nitinol.

14. The assembly of any one of the preceding claims, additionally comprising a guiding catheter.

15. The assembly of claim 13, wherein the guiding catheter is located coaxially about at least a portion of said core wire and vasoocclusive coil.

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